



Appn. No.: 10/002,763

Grp./A.U.: 3671

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Remarks/Arguments to Supplemental Claim Amendments

Reason for the Supplemental Claim Amendment:

After additional perusal on hindsight of the RCE Submission sent just five business days ago and a careful reconsideration of the advice of the patent attorney consulted regarding the Examiner amended claim 57, the applicant is submitting additional claims to append to the ones sent with the RCE. The inclusion has somehow escaped the applicant in her effort to meet the deadline for the filing of the RCE. The Submission for the RCE sent Oct. 30, 2003 involved a lot of work. There were 42 pages of Remarks/Arguments to accompany the Claim Amendments, Specification Amendments, and 73 sheets of amended formal drawings.

Also, the applicant has to narrow claims 69 and 77 to clearly overcome a prior art patent uncovered a few days ago. A supplemental IDS is being sent with this communication.

Since it is only five business days ago that the applicant sent the first Submission, it is reasonable to assume that the Examiner has not yet started to prepare an office action regarding the RCE. Therefore, pursuant to MPEP 714.03(a), these additional submission should be entered as soon as possible because it will greatly facilitate the Examiner in his work.

There is a combined total of 3 new independent claims. Claim 57 may be cancelled and replaced with claim 81 if the Examiner becomes convinced of the its patentability.

Claim 81 patentability argument:

Claim 81 is basically claim 57 without the hand grips and the connecting means associated with the hand grips. The second connecting means recited in claim 57 is retained but in broader form. A fully functional picking rake is still possible with just the remaining elements.

According to the patent attorney consulted, the second connecting means alone is sufficient to overcome Mitchell, particularly because it is non-detachable.

A search of prior art produced no other dual-headed tool either with or without completely overlapping, partially overlapping or non-overlapping rake heads used for raking and picking having a non-detachable connection means equivalent to that of the present invention. The idea is novel, unique and unobvious, therefore, patentable.

The idea of a connection that allows movement in more than one dimension to cover the range of motions, motions that are line with the natural tendency exhibited by the hands/arms of a person when doing a conventional raking and picking operation, has escaped prior art. It is not obvious. Uncovered prior art that does a picking operation with permanently connected picking heads uses completely overlapping heads connected together by some means that allow the overlapping heads to open and close in a clam-shell fashion. The picking operation is usually done with the two overlapping heads remaining in a substantially horizontal or raking position. The user has to turn both rake heads together as one unit in the same direction about

90 degrees before he/she can open up and use the two rake heads in a position substantially normal to its previous raking position like that of the present invention. This is cumbersome and requires some mental work and concentration. Notice that most of these other picking rakes have their connection means between the grasping section of the handle and the rake head, the connecting point interfering with the line of sight of the user and somehow limiting the volume of debris that can be grasped. This operation is definitely out of line with the normal tendency of the user and the structure of the human body, the hands representing the rake head and the shoulder joints representing the connection means that are not interfering with the line of sight of the user. Even the Mitchell patent teaches that the only way to do a picking operation with a side-by-side rake head arrangement in a manner like that of the present invention is to completely detach the two rake parts. If Mitchell added on a prior art connecting means in the field of rakes, the two rake heads cannot be separated. The hook and opening connection will keep them together since the prior art connecting means would be on the upper end of the shorter handle - the very location of Mitchell's detachable connecting means that has to be detached first before the hook can be dislodged from the opening. And even if the hook and opening connection means were absent and the rake heads could be separated and opened up, they would be askew during the picking operation and not pick anything. The connecting means of the present invention is able to overcome this.

The connecting means may be simple but definitely not obvious because it has escaped inventors of prior art in the field. Simplicity should not a deterrent to the

patentability of an invention. It is usually the simple ones that withstand the test of time. The simplicity of the connecting means of the present invention should only work to support its patentability based on the idea of the omission of elements. If a simple invention, using less parts and resources produces the same effect or result as a complicated one, the simple invention should be granted a patent. If a simple invention, using less parts and resources produces a better effect or result than existing complicated ones, the simple invention deserves a patent even more.

If the hand grip and the connecting means are in the same claim, a non-infringing rake with the connecting means of the present invention but without the hand grip can be fabricated and sold. A hand grip can be sold separately and simply attached permanently or adjustably at a later time. The disclosure of the present invention is replete with ways in which the hand grip and/or arm grip can be adjustably disposed on the elongated members of the rake handles.

Claims 82 through 86 simply recites the different connecting means to effect the results recited in Claim 81.

The applicant may appear paranoid about non-infringement or infringement issues but this is a valid concern faced by all inventors. Disappointments and court battles could have been avoided if the inventor was made aware of the ways his/her claims can be infringed before the patent is granted so that he/she can still act accordingly. Disappointments and court battles could be avoided if the applicant is granted the broadest possible claim his/her invention deserves. Now is the time to insure

that the applicant is protected adequately. After all, he/she thought of the idea first and his/her disclosure will help pave the ground for future inventions in the field.

The other independent claim 62 has more than enough elements to overcome prior art (hand grips and connecting means) but at least if someone changes the connecting means, another independent claim 77 is there to cover the handle.

In the process of arguing in order to overcome just the Mitchell patent, the applicant overlooked the fact that the rake heads of the present invention need not be only partially overlapping or non-overlapping to overcome prior art. It could be completely overlapping as well. It overcomes prior art in the field of any kind of rake head based on just the unique results derived from the non-detachable connecting means. None of the non-detachable connecting means in prior art is equivalent to that of the present invention. The detachable connecting means of the present invention overcomes all other non-detachable connecting means because they are different in structure, way of achieving their functions and results. Even where the connecting means is completely detachable, as in Mitchell), there are still significant differences in structure, way of achieving their function and result. Therefore, the present invention is non-equivalent on all three counts for all non-detachable and detachable dual-headed rakes.

In view of the above, the applicant is amending claim 62 to reflect a broader rake head coverage by changing line 15 from "...each rake head contributing to the total raking span..." to "at least one rake head contributing to the

total raking span...". This change does not constitute the addition of new matter. It simply broadens the claim without going over the realm of prior art. Even if the specification and figures disclosed in the present invention showed rake heads that are basically non-overlapping or only partially overlapping, this claim would still cover it. In other words, when it comes to overcoming prior art, either version of the present invention only needs to show its connecting means and/or its hand grips. Both elements are in claim 62. The rake heads become irrelevant.

Another deletion is made in claim 62 which is "wherein each of the first and second hand grips lie on a second infinite plane; and wherein the first and second infinite planes each contain a common intersecting line; and". This is because the reference to the second infinite plane will no longer be necessary after claim 69 is amended. Also this will broaden the claim further without falling in the realm of prior art. The hand grips do not have to be aligned side by side on the same second plane in this main claim. This is be further explained in the section where claim 69 is amended.

Amendments to Claims 69 and 77 to Overcome New Prior Art

The new prior art uncovered is Lintz (Pat.# 5,687,556). It discloses a rake head attached to an elongate extension shaft, the extension shaft having an elongate grip shaft projecting proximally from the extension shaft at an acute angle. The extension shaft and the grip shaft are extended to become parallel with each other forming a leverage region. A forearm brace,

preferably of flexible material, is mounted between the parallel shafts in the leverage region.

The applicant will now argue the non-equivalence of both the hand grip and the arm leverage of the present invention to the grip shaft and forearm brace of Lintz's invention.

A. Non-equivalence of the hand grip to the grip shaft

All of Lintz' three independent claims recite an elongate grip shaft projecting proximally from the elongate extension shaft at an acute angle. Lintz considers this acute connection very important for ergonomic reasons. A handhold extending about 45 degrees relative to the line of the user's arm is considered typical. Thus, the acute angle.

To overcome this reference, the applicant is also amending claims 69 (dependent on independent claim 62) and 77 (independent) by specifying that the hand grips extends proximally from the elongated member at an angle greater than an acute. The reference to the second infinite plane recited in Claim 62 is no longer necessary. Therefore, Claim 62 is also amended just to delete recitation of the second infinite plane. Besides the right and left hand grips may not be on the same plane even when connected as shown in Figs. 48-A through 49-B. The orientation of the hand grip is not specified because the claim does not yet include the arm leverage, therefore cannot infringe on Lintz. And even if it includes the arm leverage, it still will not infringe as will be argued shortly.

The above narrowing of the claims with or without Lintz cannot be considered minor, insignificant, nor obvious. An angle greater than acute includes an angle of 90 degrees or greater. Note that the word "acute" in

Lintz's main claims can be interpreted by a judge to be "substantially acute" as gleaned from his disclosure which means that angles that are "substantially perpendicular" or substantially not acute" are not covered. It would be very difficult to differentiate between a 89.99999 degree angle and a 90 degree angle in an article of manufacture such as that of the present invention. The 90 degree angle is the most preferred one for hand grips as most prior art shows. The figures disclosed in the present invention show the grips to be generally normal to the elongated member not just because they are easier to illustrate in various perspective views. There are other very good reasons.

The hand grip of the present invention performs functions in the raking, detaching, picking, and attaching operations. Lintz's is used only for raking and picking. For comparison purposes, the applicant will cover the detaching and attaching functions as well if an acute hand grip was used - just to drive home the patentability not only of claim 77 but also of claim 69.

I.

To start, let us imagine two Version II picking rakes of the present invention in the raking mode. One has left and right hand grips projecting proximally at a 90 degree angle from their respective elongated members and another has left and right hand grips projecting proximally at an acute angle from their respective elongated members. These two rakes do not act the same way with regard to the ability of the user to execute the lifting, releasing, pulling, lifting, releasing, pulling ... motions associated with raking. While an acute angle is presently claimed to be advantageous in the picking up process (the applicant

will argue against this shortly) it definitely is disadvantageous in the conventional raking process disclosed in the present invention. Referring to Figs. A1 and A2 below,

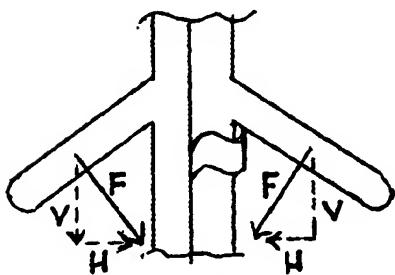


Fig. A1

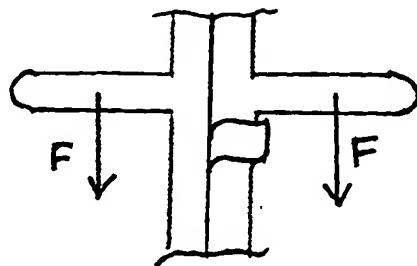


Fig. A2

an upward pulling force (F) exerted normal to the line of an acute hand grip is divided into a horizontal component (H) and a vertical component (V), the horizontal component being one directed towards the elongated member and the vertical component being one directed upward towards the user. The only desired direction of the force for raking is the one directed towards the user. An equal upward pulling force (F) when exerted normal to the line of a perpendicular hand grip has no horizontal component. All the force is directed towards the user. **Given the same force, a perpendicular hand grip transmits more upward force (F) than that of an acute one (V).** Thus, a perpendicular hand grip is more advantageous to the conventional raking operation in the present invention than an acute one.

II.

A perpendicular hand grip is also more advantageous than an acute one in the detachment of the first and third connecting means of the present invention. Please refer to Figs. B1, B2 and B3 below.

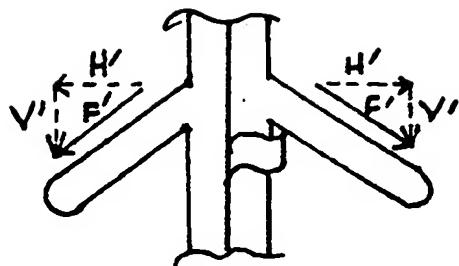


Fig. B1

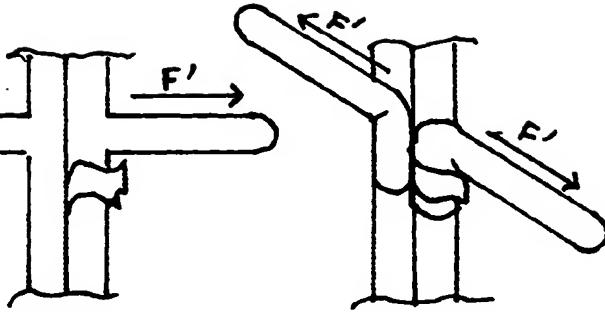


Fig. B2

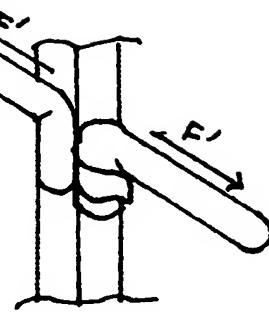


Fig. B3

Here, the force (F') is exerted outward along the line of the hand grip. In the acute hand grip, part of the force is lost to the vertical component (V') which is directed upward and away from the opening of the resilient member. The remaining horizontal component (H') which is directed normal to the opening of the resilient member (M) is less than that derived from the perpendicular hand grip. For them to be equal, the opening of the resilient member should be made to face along the line of the acute hand grip and the other hand grip should also be on the same line as the first acute one. This is possible only on hand grips that have the first and second portions. As shown in Fig. B3, the other hand grip should be also on the same line as the first acute one to effect the same detaching force as one on a perpendicular one. If they are not aligned, more force would be required on the other acute hand grip. Imagine the inconvenience the other hand is subjected to during this detachment process. Of course this is not aesthetically and functionally desirable.

Perpendicularly arranged left and right hand grips fall on the same line thus providing maximum efficiency in the detachment operation. Efficiency is maximized also in the attachment operation of the first and third connecting means based on the same arguments just presented.

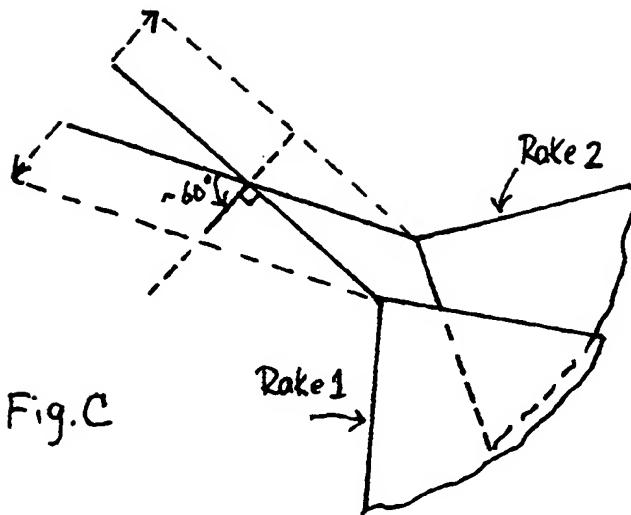
Based on the above, a perpendicular hand grip is not equivalent to Lintz's acute grip shaft not only

structurally but also because they produce significantly different results in the attaching and detaching operation of the present invention.

III.

In the picking operation, Lintz acute grip shaft and a perpendicular grip shaft surprisingly produce the same results. The claimed ergonomic contribution of the acute grip shaft does not exist. An acute angle is desired in order to conform to the handhold line of a user relative to the line of his/her arm. According to Lintz, this is about 45 degrees. However, the angle of Lintz' grip shaft is proximally acute relative to the elongate extension shaft (preferably 60 degrees) and not to the line of the arm of the user. One cannot control the angle between the handhold and the arm of the user unless the arm is confined and clamped to a rigid brace. Actually, some articulation of the wrist is desirable. Therefore, a hand grip proximally extending at an angle greater than acute can still be used "ergonomically" by simply tilting the handle towards its lower end. Doing so produces an acute relationship between the handhold and the line of arm of the user. An "ergonomic" position can be achieved regardless of the relationship between the elongated member and the hand grip.

As shown in Figure C below, two picking rakes, one with a hand grip perpendicular to its elongated member (Rake 1) and another with a hand grip attached at an acute angle to its elongated member (Rake 2) each used by a person (User1 and User2 respectively) with equal bodily dimensions and capability and standing within the same distance before the same pile of debris are compared.



User1 and User2 are using the hand grips at the same desired angle relative to the line of their arms (both hand grips coincide). Notice that the rake head of Rake 2 is higher than the rake head of Rake 1. This means that in order to lower the rake head of Rake 2 closer to ground level and still maintain the so called "ergonomic" position of the hand, User2 has to extend his/her elbow out further and take a step backward. The same case holds for Rake 1. To raise the rake head of Rake 1 above ground level and still maintain the same position of the hand, User1 has to bend his/her elbow and take a step forward. Now, considering both users will be doing the same amount of stretching and bending of elbows and taking steps backward and forward to do the same task all the while maintaining the "ergonomic" hold, **the perpendicular hand grip and the acute grip shaft produce the same results during the picking operation. Since the handhold of the two units compared is the same in the non-conventional raking operation, they also therefore would produce the same results there. However, the method of achieving the same**

result is not the same. In this regard, the two picking rakes are not equivalent even in the picking operation.

IV.

Also importantly, take into consideration that the upper end of the elongated member of Rake 2 in Fig. C above is closer to User2 than the upper end of the elongated member of Rake 1 is to User1. This is an undesirable consequence of using an acute hand grip. That is why Lintz' figures show a preferred embodiment having an elongate extension shaft bent down towards its upper end just to avoid poking the user. **Since it is generally more laborious to have to bend parts and/or attach parts at an angle, the present invention's perpendicular hand grip is better than Lintz' grip shaft, costwise.**

V.

Another advantage a perpendicular hand grip has over an acute one is its interchangeability. The hand grip and arm leverage of the present invention can be used by either left hand or right hand without having to detach the rake heads from their elongated members and turned over. The whole unit is simply turned over. The elongated member that is at the top in one hand simply shifts to the bottom in the other hand. The rake head prongs still point inwardly for picking. On the other hand, if the hand grip is acute, the user would have to detach the right rake head from the elongated member, turn the head over, and reattach the head before he/she can use it for the left hand. And even so, if a rigid forearm brace is used like that of the present invention, it is not possible to interchange the rakes at all except of course if the user does not mind having a

very contorted handhold in the hand holding the wrong rake. Because the perpendicularity of the present invention's hand grip allows the left and right rake units to be interchangeable despite a rigid arm leverage, the perpendicular hand grip of the present invention is not equivalent to Lintz' acute grip shaft. The perpendicular hand grip is more advantageous than the grip shaft. This advantage can have a positive impact on cost and convenience to the user.

VI. Looked in another way, if an acute angle does impart an ergonomic contribution to the present invention (this was argued as non-existent earlier) an obtuse angle will impart the same ergonomic contribution to the present invention by simply interchanging the left and right rake units. For this reason the element "greater than acute" is definitely novel and unobvious and therefore patentable over Lintz.

Based on the arguments presented from I. to VI. above, the applicant's claim 69 and 77 is able to overcome Lintz' invention as prior art. The change regarding the greater than acute (includes perpendicularity) or acuteness of the hand grip surprisingly produces significantly different results. The applicant is able to show that the ergonomic advantage of the acutely angled hand grip over a perpendicular one is non-existent in the picking and raking operations. The extra cost to produce it and the other limitations associated with it are not justified. This is a direct contradiction to what Lintz teaches, therefore, the present invention's claim is novel and unobvious, therefore, patentable.

B. The arm leverage of the present invention is not equivalent to the forearm brace of Linz's invention

I. The arm leverage of the present invention as claimed in Claim 69 performs functions beyond what the forearm brace of Linz can do. It is preferably rigid for this reason. Linz prefer a flexible one to for interchangeability between the left and right rake units. Linz forearm brace is claimed and meant to only oppose pivot of the rake head about the user handhold. The arm leverage of the present invention performs more functions than that.

In the conventional raking mode where the two rake units are connected, the arm leverage performs a different function than Linz. Please note that Linz's rake is not meant for use as a rake in the conventional way. Looking at a right arm leverage in Fig. 6-A of the application, the top portion can absorb the functions of the hand grips in the raking mode, facilitating the lifting, pulling, and releasing motions. The left upright portion is capable of housing the first connecting means of the present invention. The right portion provides leverage for the forearm during the detaching operation. None of these involve opposing pivot about the hand grip. **Because the overall function of the arm leverage is different and not equal to that of Linz's forearm brace, they are not equivalent.**

II. Can Linz's forearm brace perform the same function as that of the present invention even if it is not claimed if put to use in the conventional raking mode of the picking rake? No is the answer. Linz's claims recite nothing about the structural components of the forearm brace other than that it is between the extension shaft and the grip shaft in a leverage region to oppose pivot of the rake head

about the handhold. The specifications and figures show the brace to be preferably made of flexible material. A flexible material, even a semi-rigid one is not suitable as something to grip in the raking mode. Being flexible, it configures as a semi circle providing no contact point for any appropriate connecting means with another of the same structure. It might provide some leverage to disconnect a connecting means disposed somewhere else in the picking rake.

III. Lintz's disclosure mentioned the possibility of having a rigid forearm brace but only in the form of tubular sleeves fitted to the brace and adapted for reversible application to the extension and grip shafts. It could be anything, but unless more specific structural details are disclosed instead of just a "pivot about the handhold-preventing" element, there is little structure to overcome.

Any element recited as a function in a main claim should be construed as covering only the equivalent of the structural details performing the function as disclosed in the specifications. Again, in this regard the rigid or flexible forearm brace as disclosed in Lintz's specification is not equivalent to the rigid arm leverage of the present invention. The arm leverage of the present invention serves more functions than the forearm brace.

IV. Using the very vague and meager structural disclosure about a rigid forearm brace, the arm leverage of the present invention and the rigid forearm brace can be argued to still be non-equivalent. The arm leverage, though rigid, need not be detached and refitted to the elongated member as what Lintz disclosed even if the rake units are

interchanged between the left and right hands. The arm leverage plays a synergistic role with the perpendicular hand grips.

V. Now one can argue that a flexible arm leverage feels more comfortable against a user's forearm. A rigid arm leverage can be configured to approximate the arched curvature of a user's arm like that shown in Fig. 36-A and still be comfortable without sacrificing the first and second portions (points of connecting means) of the arm leverage. These portions may not even come in contact with the user's arm during the raking and picking process. These portions need be the only rigid part of the arm leverage. And even so, that portion can also be arched just on the inside.

VI. Also consider the fact that if the entire handle is fabricated as one unit, a totally rigid arm leverage would be less laborious. The need to mount a flexible arm leverage is obviated. The method to rigidify the forearm brace and make it still interchangeable as disclosed by Lintz includes refitting of the sleeves to the extension and grip shafts. This implies the fabrication of a separate rigid forearm brace with sleeves apart from the extension and grip shafts. **Therefore, costwise, the arm leverage of the present invention is better than the forearm brace of Lintz whether it is rigid or not.**

C. If a person skilled in the art is given the disclosure from Lintz's rake system, can he/she picture as obvious another rake system using two rake units next to each other and use it as a rake in the conventional way?

The answer is **no** for the following reasons:

Lintz's invention:

- a. The system looks complete already. The rake heads look whole. Both hands are occupied with the same task.
- b. It is meant for raking debris in the non-conventional way. The short and angled extension shaft cannot imply raking in the conventional way.
- c. The disadvantages associated with the acute slant of the grip shaft and a flexible forearm brace in the conventional raking, detaching and attaching operations discussed earlier imply that Lintz's rake system cannot be used in the configuration of the present invention.
- d. The synergistic effects (interchangeability and in the conventional raking functions) of the rigid arm leverage and perpendicular hand grips in both the raking and picking operations are non-existent in Lintz.

Based on all the above, the present invention as claimed in all of its independent and independent claims is not obvious in view of Lintz. It has also more than enough elements to render it non-infringing namely: the greater than acute relationship between the elongated member and the non-equivalent arm leverage.

Patents can be entitled to multiple independent claims as long as it is within the scope of the spirit of the invention and does not require a heavy burden on the part of the Examiner to search the field and to examine the merits of these independent claims. The independent claims presented in the amendments are definitely within the same search field.

Conclusion:

Therefore, based on the arguments presented above, it is submitted that patentable subject matter is clearly present. If the examiner is convinced but does not feel that the present claims are technically adequate, the applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to MPEP 706.03(d) and MPEP 707.07(j) in order that the applicant can place this application in allowable condition as soon as possible and without the need for further proceedings.

Thank you.

Respectfully yours,

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on the date below:

Date: 11/07/03

Inventor's Signature: Mary Ann Canfield
